CLAIMS

Claim 1. An apparatus for providing abnormal overvoltage protection between inputs and outputs, both including line and neutral, the apparatus comprising a ground, a first voltage limiter extending between the line and the ground, said first voltage limiter developing heat upon the existence of abnormal voltage between the line and the ground, a first thermal fuse, said first thermal fuse extending between the line input and the line output, said first thermal fuse opening in response to said heat developed by said first voltage limiter, a second voltage limiter extending between neutral and the ground, a second thermal fuse, said second thermal fuse extending between the neutral and the ground, said second thermal fuse opening in response to said heat developed by said second voltage limiter, a voltage interconnect, said voltage interconnect passing voltage between the line and neutral inputs under conditions of the opening of said first or second thermal fuses.

Claim 2. The apparatus of claim 1 characterized in that said voltage interconnect is a capacitor.

Claim 3. The apparatus of claim 1 characterized in that said second thermal fuse extends between said second voltage limiter and the ground.

Claim 4. The apparatus of claim 1 characterized in that said second thermal fuse extends between the neutral input and said second voltage limiter.

Claim 5. The apparatus of claim 1 characterized in that said second thermal fuse also extends between the neutral input and the neutral output.

Claim 6. The apparatus of claim 5 characterized in that said second voltage limiter extends between the neutral output and the ground.

Claim 7. The apparatus of claim 1 characterized in that the ground is common to the input and the output.

Claim 8. The apparatus of claim 1 characterized in that the first voltage limiter is connected to the line output.

Claim 9. The apparatus of claim 1 characterized in that the second voltage limiter is connected to the neutral input.

Claim 10. The apparatus of claim 1 characterized in that said voltage interconnect is a sidactor.

Claim 11. The apparatus of claim 1 characterized in that said voltage interconnect is a gas tube.

Claim 12. An apparatus for providing abnormal overvoltage protection between inputs and outputs, both including line and neutral, the apparatus comprising a ground, a first voltage limiter extending between the line and the ground at a first node, said first voltage limiter developing heat upon the existence of abnormal voltage between the line and the ground at said first node, a first thermal fuse, said first thermal fuse extending between said first node and the line input, said first thermal fuse opening in response to said heat developed by said first voltage limiter, a second voltage limiter extending between neutral and the ground, a second thermal fuse, said second thermal fuse extending in series with said second voltage limiter between the neutral and the ground, said second thermal fuse opening in response to said heat

developed by said second voltage limiter, a voltage interconnect, and said voltage interconnect passing voltage between the line input and ground input under conditions of the opening of said first or second thermal fuses.

Claim 13. The apparatus of claim 12 characterized in that said voltage interconnect is a capacitor.

Claim 14. The apparatus of claim 12 characterized in that said second thermal fuse extends between said second voltage limiter and the ground.

Claim 15. The apparatus of claim 12 characterized in that said second thermal fuse extends between the neutral input and said second voltage limiter.

Claim 16. The apparatus of claim 12 characterized in that said second thermal fuse also extends between the neutral input and the neutral output.

Claim 17. The apparatus of claim 16 characterized in that said second voltage limiter extends between the neutral output and the ground.

Claim 18. The apparatus of claim 12 characterized in that the ground is common to the input and the output.

Claim 19. The apparatus of claim 12 characterized in that the first voltage limiter is connected to the line output.

Claim 20. The apparatus of claim 10 characterized in that the second voltage limiter is connected to the neutral input.

Claim 21. The apparatus of claim 12 characterized in that said voltage interconnect is a sidactor.

Claim 22. The apparatus of claim 12 characterized in that said voltage interconnect is a gas tube.

Claim 23. An apparatus for providing abnormal overvoltage protection between inputs and outputs, both including line and neutral, the apparatus comprising the input having a ground, a first voltage limiter extending between the line output and the input ground at a first node, said first voltage limiter developing heat upon the existence of abnormal voltage between the line output and the input ground at said first node, a first thermal fuse, said first thermal fuse

extending between said first node and the line input and being substantially parallel to said first voltage limiter, said first thermal fuse providing heat upon the application of a line overvoltage, said first thermal fuse opening in response to said heat developed by said first voltage limiter, a second voltage limiter extending between neutral input and the ground at a second node, a second thermal fuse, said second thermal fuse extending in series with said second voltage limiter between the neutral input and the ground, said second thermal fuse opening in response to said heat developed by said second voltage limiter, a voltage capacitor, said voltage capacitor interconnect passing voltage between the line input and ground input under conditions of the opening of either of said first or second thermal fuses to heat the other of said first or second voltage limiters and open the other of said first or second thermal fuses respectively.

Claim 24. An improvement for a voltage surge protector having a thermal fuse extending between line input and line output, a reference input, such thermal fuse opening based on the condition of a voltage limiter extending between line and the reference input, the improvement comprising a ground, a neutral input and output, the reference input being said ground, a second thermal fuse opening based on the

condition of said second voltage limiter extending between said neutral and said ground, an interconnect capacitor, and said interconnect capacitor extending between line and neutral.

Claim 25. The improvement of claim 24 characterized in that the thermal fuse is located between the voltage limiter and the line input.

Claim 26. The improvement of claim 24 characterized in that the thermal fuse is located between the voltage limiter and the line output.

Claim 27. The improvement of claim 24 characterized in that said second voltage limiter connects to said neutral input.

Claim 28. The improvement of claim 27 characterized in that said second thermal fuse is located between said second voltage limiter and the neutral output.

Claim 29. The improvement of claim 27 characterized in that said second thermal fuse extends in series with said second voltage limiter neutral to ground.

Claim 30. A method for providing abnormal overvoltage protection between inputs and outputs including both line and neutral, the method sensing the existence of an abnormal voltage on one of line or neutral, opening a first fuse on said one of line or neutral in response to said sensing of said abnormal voltage, and opening a second fuse on the other of said one of line or neutral by selectively passing voltage between the line and ground inputs under conditions of the opening of said first or second fuses.

Claim 31. An improved method for operating a voltage surge protector having a thermal fuse extending between line input and line output, the method including opening such thermal fuse based on the condition of a voltage limiter extending between line and a reference ground and opening a second thermal fuse extending between neutral and said ground, with one of the opening of said first or said second thermal fuse utilizing an interconnect capacitor extending between line and neutral.